

We claim:

1. A process for preparing an aqueous dispersion of particles
5 composed of addition polymer and finely divided inorganic
solid (composite particles), in which process a mixture of
ethylenically unsaturated monomers is dispersely distributed
in aqueous medium and is polymerized by the method of
10 free-radical aqueous emulsion polymerization by means of at
least one free-radical polymerization initiator in the
presence of at least one dispersely distributed, finely
divided inorganic solid and at least one dispersant, wherein

a) a stable aqueous dispersion of said at least one
15 inorganic solid is used, said dispersion having the
characteristic features that at an initial solids
concentration of $\geq 1\%$ by weight, based on the aqueous
dispersion of said at least one solid, it still contains
in dispersed form one hour after its preparation more
20 than 90% by weight of the originally dispersed solid and
its dispersed solid particles have a weight-average
diameter ≤ 100 nm,

b) the dispersed particles of said at least one inorganic
25 solid exhibit a nonzero electrophoretic mobility in an
aqueous standard potassium chloride solution at a pH
which corresponds to the pH of the aqueous reaction
medium at the beginning of the emulsion polymerization,

30 and

c) the mixture of ethylenically unsaturated monomers
contains > 0 and $\leq 4\%$ by weight, based on its overall
amount, of at least one ethylenically unsaturated monomer
35 A, which comprises either

- at least one acid group and/or its corresponding
anion, if the dispersed particles of said at least
one inorganic solid have an electrophoretic mobility
40 with a positive sign under the abovementioned
conditions,

or

45 - at least one amino, amido, ureido or N-heterocyclic
group and/or its ammonium derivatives alkylated or
protonated on the nitrogen, if the dispersed

5 2. A process as claimed in claim 1, wherein said at least one
inorganic solid is selected from the group consisting of
silicon dioxide, aluminum oxide, tin(IV) oxide, yttrium(III)
oxide, cerium(IV) oxide, hydroxyaluminum oxide, calcium
carbonate, magnesium carbonate, calcium orthophosphate,
10 magnesium orthophosphate, calcium metaphosphate, magnesium
metaphosphate, calcium pyrophosphate, magnesium
pyrophosphate, iron(II) oxide, iron(III) oxide, iron(II/III)
oxide, titanium dioxide, hydroxyapatite, zinc oxide, and zinc
sulfide.

3. A process as claimed in either of claims 1 and 2, wherein said at least one inorganic solid in water at 20°C and 1 bar (absolute) has a solubility ≤ 1 g/l water.

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25 5. A process as claimed in any of claims 1 to 4, wherein said at least one monomer A comprises at least one acid group and/or its corresponding anion which is selected from the group consisting of the carboxylic acid, sulfonic acid, sulfuric acid, phosphoric acid and phosphonic acid groups.

6. A process as claimed in any of claims 1 to 5, wherein said at least one monomer A is selected from the group consisting of acrylic acid, methacrylic acid, maleic acid, fumaric acid, itaconic acid, crotonic acid, 4-styrenesulfonic acid, 2-methacryloxyethylsulfonic acid, vinylsulfonic acid and vinylphosphonic acid.

7. A process as claimed in any of claims 1 to 4, wherein said at least one monomer A is selected from the group consisting of 2-vinylpyridine, 4-vinylpyridine, 2-vinylimidazole, 2-(N,N-dimethylamino)ethyl acrylate, 2-(N,N-dimethylamino)ethyl methacrylate, 2-(N,N-diethylamino)ethyl acrylate, 2-(N,N-diethylamino)ethyl methacrylate, 2-(N-tert-butylamino)ethyl methacrylate, N-(3-N',N'-dimethylaminopropyl)methacrylamide and 2-(1-imidazolin-2-onyl)ethyl methacrylate and also 2-(N,N,N-trimethylammonium)ethyl acrylate chloride, 2-(N,N,N-trimethylammonium)ethyl methacrylate chloride,

